

and/or use the invention.” Regarding claims 11 and 14, the term substrate as described in the specification is used to describe the semiconductor device generally throughout the process and does not simply refer to the initial substrate upon which the various layers are formed, as the term is often used. See page 6, lines 4-8. Accordingly, to clarify this meaning, Applicants amend claims 11 and 14 to replace “substrate” with “device”. Further in regard to claim 14, Applicants amend this claim in accordance with the Examiner’s rejection to state “applying a solution of a compound onto the surface of the device...wherein the compound is...”. Claim 14 now recites that the compound is used “to form a protective film” rather than the compound being the protective film. In addition, the reference to “organic substance” has been removed. Accordingly Applicants request that the rejections under 35 U.S.C. § 112, first paragraph be withdrawn.

The Examiner also rejected claims 11, 13, 15, and 16 under 35 U.S.C. § 102(e) as being anticipated by Obeng et al. (U.S. Patent No. 6,323,131). Contrary to the Examiner’s assertion, Obeng does not teach every recitation in claim 11. Obeng, similar to the disclosure in the Background Art of the disadvantages associated with the process of Figs. 9A-9D, teaches the protective film covering the first insulating layer as well as the wiring. Claim 11 is amended to recite, “a second insulating film contacting the first insulating film.” The two insulating layers 10 of Obeng are separated along their entirety by layer 24 and are never in direct contact as required by claim 11. Accordingly Applicants believe claim 11 is allowable over Obeng and as such, dependent claims 13, 15, and 16 are also allowable.

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The Examiner further rejected claims 12, 14, 20, and 21 under 35 U.S.C. §103(a) as being unpatentable over Obeng et al. in view of Avanzino et al. (U.S. Patent No. 6,350,687) alone or in further combination with Endo et al. (U.S. Patent No. 5,795,828). Because claim 12 depends from claim 11, Applicants feel this claim is in condition for allowance over Obeng and Avanzino for at least the reasons stated above. Regarding claim 14, although Avanzino does appear to teach a similar protective film, Avanzino teaches the protective film 40 as being an interim protection to prevent oxidation that is removed before the next insulating layer is applied. Accordingly, claim 14 is amended to recite that the second insulating layer is applied in contact with first insulating film *and* the protective film. Because Avanzino removes protective film 40, it cannot meet such a recitation. Regarding claims 20 and 21, as dependent claims from claim 14, they should also be allowable.

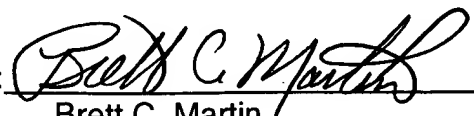
In view of the foregoing amendments and remarks, Applicant respectfully requests the reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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APPENDIX TO AMENDMENT OF NOVEMBER 12, 2002
VERSION WITH MARKINGS TO SHOW CHANGES MADE

AMENDMENTS TO THE CLAIMS

11. (Amended) A method of manufacturing a semiconductor device[s],
comprising the steps of:

making a first concavity in a first insulating film [on a surface] of [a substrate] the
device;

covering the first concavity with a first barrier layer for preventing metal diffusion;

burying the first concavity covered with [a] the first barrier layer [for preventing
metal diffusion] with a wiring metal;

polishing the [substrate] device to remove a part of the wiring metal residing
higher than the upper peripheral level of the first concavity so as to leave a first metal
layer in the first concavity;

applying a solution of an organic substance [tending to be bound to the first metal
layer onto the surface of] to the [substrate] device so as to form a protective film of the
organic substance on a surface of the first metal layer for preventing metal diffusion;

forming on the surface of the [substrate] device a second insulating film [directly
connected to] contacting the first insulating film and the protective film;

making a second concavity in the second insulating film in a region above the
first metal layer;

covering the second concavity with a second barrier layer; and

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burying the second concavity covered with [a] the second barrier layer with a second wiring metal layer [to be connected to], the second wiring metal layer contacting the first metal layer.

14. (Amended) A method of manufacturing a semiconductor device, comprising the steps of:

making a first concavity in a first insulating film [on a surface] of [a substrate] the device;

covering the first concavity with a first barrier layer for preventing metal diffusion;

burying the first concavity covered with [a] the first barrier layer [for preventing metal diffusion] with a wiring metal;

polishing the [substrate] device to remove a part of the wiring metal residing higher than an upper peripheral level of the first concavity to leave a first metal layer in the first concavity;

applying a solution of [an organic substance tending to be bound to the first metal layer] a compound onto the surface of the [substrate] device so as to form a protective film [of the organic substance on a surface of the first metal layer] for preventing metal diffusion on a surface of the first metal layer;

wherein the [protection film] compound is stannous chloride, stannous borofluoride, stannous sulfate, nickel sulfate, nickel chloride, or nickel sulfamate;

forming on the [surface of the substrate] device a second insulating film [directly connected to] contacting the first insulating film and the protective film;

forming a second concavity in the second insulating film in a region above the first metal layer; and
covering the second concavity with a second barrier layer; and
burying the second concavity covered with [a] the second barrier layer with a second wiring metal layer [to be connected to], the second wiring metal layer contacting the first metal layer.

16. (Amended) The method of claim 11, further comprising washing the [polished substrate] device to eliminate particles therefrom, after the polishing [the substrate to remove the metal residing higher than the upper peripheral level of the first concavity to leave the first metal layer in the first concavity].

21. (Amended) The method of claim 14, further comprising washing the [polished substrate] device to eliminate particles therefrom, after the polishing [the substrate to remove the metal residing higher than the upper peripheral level of the first concavity to leave the first metal layer in the first concavity].